

Claims

1. Comminuting device (10), including
 - A comminution chamber (12) having a bottom wall (16) and a circumferential wall (14) projecting upward from the bottom wall (16),
 - A rotationally drivable drive shaft (22) extending essentially orthogonal to the bottom wall (16) and
 - At least one comminution element (28a) arranged adjacent to the bottom wall (16) and capable of being set in revolving motion about the drive shaft (22) by said shaft (22), characterized in that, above the comminution element (28a) adjacent to the bottom wall (16), a plurality of additional comminution elements (28b) capable of being set in revolving motion about the drive shaft (22) by said shaft (22) are provided.
2. Comminuting device according to claim 1, characterized in that at least a portion of the circumferential wall (14) is configured as a grating (32).
3. Comminuting device according to claim 2, characterized in that the grating (32) is composed of a plurality of members (32a) preferably extending vertical, arranged at a predetermined distance (d_2) from each other, amounting to about 38 mm, for example.
4. Comminuting device according to claim 2 or 3, characterized in that the grating (32) is surrounded by an outer jacket (34).

5. Comminuting device according to claim 4, characterized in that the outer jacket (34) has a predetermined minimum distance from the grating (32), for example about 200 mm.
6. Comminuting device according to claim 4 or 5, characterized in that, at the lower end of the outer jacket (34), a catch device (36) of preferably funnel-shaped configuration, is provided for comminuted material.
7. Comminuting device according to claims 1 to 6, characterized in that, in the circumferential wall (14), an opening (40), adjacent to the bottom wall (16) and openable and closable at will is provided.
8. Comminuting device according to any of claims 4 to 7, characterized in that at least one circumferential segment of the outer jacket (34) is swingably configured, preferably about an axis (A) extending essentially vertical.
9. Comminuting device according to any of claims 2 to 8, characterized in that at least one circumferential segment of the grating (32) is swingably configured, preferably about an axis (A) extending essentially vertical.
10. Comminuting device according to any of claims 4 to 9, characterized in that a swingable circumferential segment of the grating (32) and a swingable circumferential segment of the outer jacket (34) form a jointly manageable unit (50).
11. Comminuting device according to any of claims 4 to 10, characterized in that the outer jacket (34) comprises a polygonal, preferably an octagonal, contour.
12. Comminuting device according to any of claims 1 to 11, characterized in that at least a portion of the bottom wall (16) is configured as a grating.

13. Comminuting device according to any of claims 1 to 12, characterized in that at least one comminution element (28), preferably the comminution element (28a) adjacent to the bottom wall (16), consists of a chain.

14. Comminuting device according to any of claims 1 to 13, characterized in that at least one comminution element (28) consists of an impact member (28b).

15. Comminuting device according to claim 14, characterized in that the impact member (28b) is articulated to the drive shaft (22), preferably swingable about an axis (A) preferably extending parallel to the drive shaft (22).

16. Comminuting device according to any of claims 1 to 15, characterized in that the comminution elements (28) are arranged helically on the drive shaft (22), preferably in such manner that a comminution element (28) nearer to the bottom wall (16) is arranged to run ahead more than a comminution element (28) more distant from the bottom wall (16) in the direction of revolution about the drive shaft (22).

17. Comminuting device according to any of claims 1 to 16, characterized in that the drive shaft (22) is a hexagonal shaft.

18. Comminuting device according to any of claims 1 to 17, characterized in that the comminution elements (28) are arranged on the drive shaft (22) in planes of comminution elements, having a predetermined minimum distance (d_1) from each other, amounting for example to about 120 mm.

19. Comminuting device according to any of claims 1 to 18, characterized in that, between the free end of at least one of the comminution elements (28) and the circumferential wall (14), a predetermined distance (d_3) is provided.

20. Comminuting device according to any of claims 1 to 19, characterized in that at least one annular attachment (38) projecting inward from the circumferential wall (14), preferably of funnel-shaped configuration, is provided.

21. Comminuting device according to any of claims 1 to 20, characterized in that, in the neighborhood of the upper edge of the circumferential wall (14), a charge opening (30) is provided for supply of material to be comminuted.

22. Comminuting device according to claim 21, characterized in that the charge opening (30) extends from the upper edge of the circumferential wall (14) over a predetermined distance towards the bottom wall (16).

23. Comminuting device according to any of claims 1 to 22, characterized in that, in the uppermost plane of comminution elements and if desired also in at least one plane of comminution elements arranged thereunder, only one comminution element (28) is provided.

24. Comminuting device according to any of claims 1 to 23, characterized in that at least the at least one uppermost comminution element (28b') is configured shorter than the remaining comminution elements (28).

25. Comminuting device according to any of claims 21 to 24, characterized in that a supply passage preceding the supply opening (30) is of angled configuration.

26. Comminuting device according to any of claims 1 to 25, characterized in that the drive shaft (22) is rotatably mounted both at the bottom wall (16) and also at a ceiling wall (18) of the comminution chamber (12).

27. Comminuting device according to any of claims 1 to 26, characterized in that the drive motor (24) is connected to the drive shaft (22) by way of a belt drive (26).

28. Comminuting device according to any of claims 1 to 27, characterized in that the speed of the drive shaft (22) is between about 200 rpm and about 2,000 rpm, preferably between about 500 rpm and about 1,000 rpm.

29. Comminuting device according to any of claims 1 to 28, characterized by comprising a connection opening (48) for an exhaust device (49).